

## **Tab H**

### **Industry/Environmental Protection/Agriculture**

#### **IP Event Lesson Plan**

**1. Topic:**

Industry/environmental protection/agriculture

**2. Suggested activities:**

**Industry**

Manufacturing organizations; service organizations; financial organizations, e.g., banks, credit unions, savings and loan associations, federal housing administration offices, brokerage houses; affiliates of large national corporations; "mom and pop" stores; large and small construction firms; U.S. government operated institutions, e.g., dams and hydroelectric institutions; transportation centers, e.g., rail, air, water, truck, or pipeline

**Environmental protection**

Recycling centers, speakers from environmental protection groups; tours of waste water treatment plants; and local industry visits that incorporate voluntary and legally required environmental protection measures; water purification plants

**Agriculture**

Agricultural cooperative credit facilities; farm cooperatives; visits to dairy, truck, horse, and catfish farms; farmer's markets; agricultural colleges

**3. Student requirements:**

- A. Attire (civilian clothes/uniform)
- B. Event information sheet
- C. Camera and film
- D. Money for emergency phone call or souvenirs

**4. Escort requirements:**

- A. Advance ticket purchases if necessary
- B. Event information sheets for each international student
- C. Ensure necessary briefing information is available
- D. Brief (pre & post) international students about event(s)
- E. Ensure escort(s) are familiar with event objectives to guarantee all points are adequately covered
- F. Confirm/arrange transportation requirements
- G. Event evaluation sheets are completed by each student

H. Discuss event with point of contact at event location and ensure escort carries point of contact's name and phone number

I. Ensure point of contact at event location is provided with the objectives to be covered prior to arrival of students

**5. Introduce student to following objective(s) (under the universal declaration of human rights):**

A. **Article 17:** everyone has the right to own property alone as well as in association with others.

No one shall be arbitrarily deprived of his property.

B. **Article 23:** everyone has the right to work, to free choice of employment, to just and favorable conditions of work and to protection against unemployment.

Everyone, without any discrimination, has the right to equal pay for equal work.

Everyone who works has the right to just and favorable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection.

Everyone has the right to form and to join trade unions for the protection of his interests.

**6. IP area(s) of emphasis:**

A. Internationally recognized human rights as outlined in the universal declaration of human rights.

B. U.S. free enterprise system and its role in a democratic society.

**7. Other learning objective(s) or teaching point(s):**

A. Cannot restrain right of people to assemble peaceably and in law-abiding manner for almost any purpose.

B. Can organize collectively to secure working rights (unions).

D. Rights are applicable to any activity (in this case, business, economic, etc.)

E. Show the relationships that exist between ownership and management of companies, as well as management and union relationships.

F. Character and effect of governmental controls over industry operations.

G. Decision making procedures in the field of product research and development; production scheduling methods; marketing techniques; and quality checks and cost control measures.

H. Occupational safety and health administration (OSHA) standards as they apply to industry.

I. Federal and state aid that farmers and small business owners can apply to receive in the event of natural disasters or other emergency situations.

J. Other agricultural services in combating pests and diseases, controlling breeding stocks, and introducing improved varieties of crops.

### **Tab H.1 -- IP Event Information Sheet**

#### **Industry**

Industry, as we know it today, began early in the development of America. The history of the United States has been largely created by the deeds of its working people in industry, including organized and unorganized, skilled and unskilled, young and old, men and women, white and black, native and foreign born. This contribution has not been confined to raising wages and bettering work conditions, but has been a fundamental approach to almost every effort to extend and strengthen our democracy.

We are informed at length about our statesmen and captains of industry who contributed much to our nation's growth. However, we are inadequately acquainted with the men and women whose physical and mental labor cleared the wilderness, built the roads, bridges, levees, railroads, dams, factories, and whatever else helped create our civilization. It was with their hands and minds that this achievement was reached. Labor and its organizations have been, from our nation's start, part of the developing democratic process. Seeking redress of grievances and bargaining collectively are as much an element of democratic involvement as voting or seeking public office.

As we survey American industry, the focus turns to labor from its early beginnings to its present complex development by which certain conditions remain dramatically constant -- the historic need for struggle, for without which, as Frederick Douglas states, "there is no progress," remains as valid today as ever.

The fact is that our civilization is based upon technical advances. We are constantly making inroads into human values. Without organized resistance to the exploitation of our human and natural resources, the welfare of all is placed in jeopardy. As stated before, labor is and has been the focus of this resistance. The study of the history of working people -- in defeat as well as in victory -- provides a basis for optimism and courage. It is by Americans and their strong work ethic that our industrial advantage in the world is as strong today as it ever was.

However, our economic advantage has declined during the last several decades. Uncontrolled inflation and rising unemployment are symptoms of economic problems. Our standard of living is no longer rising. The past decade and a half has witnessed a decline in our productive growth.

One of the most serious problems facing the United States today is the condition of the national economy, whose weaknesses are attributed to a decline in American industrial strength. Since the 1960s the United States has been steadily losing ground both as an exporter of manufactured

goods and as a supplier of its own domestic market for such commodities as steel, automobiles, textiles, and electric appliances. American products are being challenged by foreign manufacturers who produce cheaper, often higher quality goods, and as other nations increase their share of both foreign and domestic markets, so the gross national product and fewer resources are devoted to building new plants or expanding producing capacity.

The United States still produces more than any other nation, but the gap is rapidly closing. When the gross national product is divided by the number of American workers it appears that there has been virtually no growth in productivity per worker since the early 1970s. This decline in manufacturing has had an effect on American society, and the hardship has been felt most severely in those areas -- chiefly the north and midwest -- where heavy manufacturing industries are concentrated. The closing of plants that once housed busy production lines, and the movement of many industries to the so-called "sunbelt" areas have tended to create distinct areas of poverty and affluence.

Not all American industries are in trouble, and the U.S. economy as a whole remains the largest and most diverse in the world. Many commentators believe that current difficulties can be overcome provided that the structure of many industries is overhauled, and that the business community -- both management and unions -- face up to the stringent competitive demands of the world market. It is argued that Americans, accustomed to believing that the future will bring higher and higher standards of living, have become complacent and have failed to match their economic expectations with higher productivity. This has occurred at a time when other industrialized nations, notably west Germany and Japan, have adopted the means to create consumer goods and export them aggressively in the markets once dominated by the United States. The goal of American industrialists, as all agree, is to improve the productivity of the American worker and restore the United States to a competitive position in the world market.

In an attempt to boost industry, many feel that the government will need to take a larger hand in the accumulation of capital necessary for industrial expansion coupled with the need for a national "industrial policy" to rejuvenate industry. This goes against the grain of a true capitalistic form of government. In light of this, American business people still place great confidence in their ability to overcome difficulties through sheer entrepreneurial energy.

## **Tab H.2 -- IP Event Information Sheet**

### **Environmental Protection**

#### **Problems in Environmental Protection**

In proportion to the earth's size, the layer of air that surrounds our globe is no thicker than the skin on an apple. A shallow crust on the earth's surface provides a limited supply of water and other resources. The tiny envelope of air and this shallow crust of earth and water are the biosphere -- that part of our world that supports life. It is a closed system in which all things are recycled and reused in support of the life process.

Human beings are a part of this closed life system and depend on it for survival. Of all living things, however, they alone are capable of consciously cooperating with nature to insure their survival and progress.

Since the industrial revolution, the accelerating growth of science and applied technology has given us increased power and new tools to alter this planet as we choose. Our scientific discoveries and technological developments have enhanced life, but too little thought has been given to the second-or-third order consequences of our actions. As the following paragraphs will show, we have failed to anticipate that the environmental modifications accompanying our actions

have a global impact on human health and welfare in both direct and indirect ways, as well as on generations to follow.

Our waters used to be clean. But industry and population growth have produced more and more industrial and human waste -- more than nature's own purification system can handle; and our waters are overloaded with impurities.

Thousands of industrial plants discharge billions of gallons of wastes into our waterways each day. Much of it is inadequately treated; some is not treated at all. Public sewer systems dump another 40 billion gallons of waste daily, including untreated sewage from more than 1,400 cities and towns and inadequately treated sewage from another 2,300 communities. An additional 50 billion gallons a day -- most of it untreated -- comes from agricultural sources including pesticides and fertilizers from farmlands as well as bacteria and chemicals from cattle and hog feedlots.

A huge volume of storm water drains into waterways every day, bringing with it tons of pollutants and eroded soil. More than 62 million tons of garbage, sludge, chemicals, explosives, debris, and dirt are dumped off our coast annually. About 8,500 accidental and deliberate oil spills contaminate our coastal and inland waters each year.

Water need not be dirty to be polluted. Power plants and many industries borrow some 130 billion gallons of water from our waterways each day for cooling purposes. When this heated water is returned to the body of water from which it has been taken, it can raise the average temperature by 20 to 60 degrees. Although the water remains clean, raising the temperature creates "thermal pollution." When the temperature of water increases, its chemical makeup changes and it loses its ability to hold oxygen. Animal life is threatened because, unfortunately, animals require more oxygen to survive as the temperature rises.

Thermal water pollution also affects reproductive behavior and alters the balance of marine populations. It increases the susceptibility of marine life to disease and causes increases in populations of bacteria and viruses.

Besides damaging marine life, water pollution affects the source water from which drinking water must be processed. The quality of source water usually determines the treatment processes required to produce safe, acceptable drinking water. More than 50,000 community drinking water systems are in use in this country and more than 200,000 drinking water systems serve locations such as restaurants and motels. Many of these systems were designed to remove from the relatively clear water of earlier days the types of bacteria found in animals and people and are not equipped to cope with the present water quality.

Beginning in 1970, the public drinking water systems in 13 states were studied. Many systems had not met bacteria standards 1 or more months during the 12-month period before the studies were made. Numerous systems also did not meet bacteria surveillance standards, and others needed either additional treatment facilities or important changes in their operation. In all 13 studies, major increases in state budgets were recommended for drinking water supervisory agencies to protect public health.

In 1978, an EPA survey of public drinking water supplies in 80 cities found that small quantities of organic chemicals were present in drinking water systems in all parts of the country. Although the survey found them in very low concentrations, their presence was cause for concern. Most conventional treatment plants, originally built to produce water from less polluted sources, may be ineffective in the removal of increasing amounts and varieties of these chemical contaminants, trace metals and radioactive materials.

Because of deficiencies in the operation of drinking water treatment facilities and distribution systems, EPA investigators are also concerned about viruses in drinking water. Infectious hepatitis, for example, an illness of the liver, is caused by a virus that may find its way into drinking water.

Most Americans are now familiar with air pollution alerts and most are aware of the causes of air pollution. Automobiles and airplanes burn fuel and discharge millions of tons of pollution into the air every year. Factories, while producing goods for households and businesses, also pour poisonous smoke into the air, power plants produce electricity, but the coal and oil they burn cause air pollution. We are able to buy more goods than ever before, but when we are finished with them, we burn many of them and further pollute the air.

The air pollution settles on land and on buildings, making them dirty. It smells bad and stings our eyes. The health costs and damage to property are estimated in the billions of dollars every year. Scientists are convinced that air pollution is a very real contributing factor to the three major diseases that cause sickness and death in our society -- heart disease, lung disease and cancer.

Noise, a more subtle pollutant, usually leaves no visible evidence. An estimated 14.7 million Americans are exposed to an on-the-job noise that threatens their hearing. Another 13.5 million of us are exposed, without knowing it, to dangerous noise levels from trucks, airplanes, motorcycles, hi-fi's, lawn mowers and kitchen appliances.

Recent scientific evidence shows that relatively continuous exposure to sound exceeding 70 decibels -- expressway traffic, for instance -- can be harmful to hearing. More than that, noise can cause temporary stress reactions such as increasing heart rate, increases in blood pressure, high blood cholesterol levels, digestive and respiratory ailments. As a result of persistent, unrelenting noise exposure, it is possible for these reactions to become chronic stress diseases like high blood pressure or ulcers.

Pesticides, like many other discoveries, have the capacity for great good or great harm, depending on how they are used. They have saved millions of lives through control of disease-carrying insects. They have minimized catastrophic crop damage from insects, weeds, plant diseases, rodents and other pests; they have preserved valuable forest and parkland from insect destruction; and they have protected households against damaging beetles, moths, and other bugs. Used in plant regulators, they prevent premature dropping of fruit. In defoliants, they stimulate uniform plant maturity so that mechanical harvesting can be used more effectively. Pesticides retard the growth of fungi in asphalt, paint, plastics, and jet fuel, and they are used in products that sterilize, disinfect, and sanitize.

On the other hand, certain pesticides, if not handled properly, present an immediate danger to the user. Some are highly toxic and may cause serious illness and even death if they are spilled on the skin, inhaled or otherwise carelessly used.

Even more perilous are pesticides that persist in the environment over long periods of time and move up in the food chain. For example, small amounts of chemicals absorbed by plankton and insects are transferred in increasing concentrations to fish, birds, animals, and eventually to humans through food. These chemicals are retained in body fat and other tissues. There is no evidence that this concentration is harmful to humans. There is evidence, however, that concentrated pesticide residues act adversely on the reproduction and behavior of certain birds and may threaten the survival of some wildlife species.

Pesticides can be widely dispersed in the environment, mainly by the action of wind and water. The most significant concentrations are around the areas of intensive use, but traces have been found in the antarctic and other areas far from the area of application.

Each year U.S. households and commercial sources generate over 140 million tons of solid waste: bottles, cans, newspapers, deodorant containers, insect spray cans, gasoline rags, packaging material, and so forth. Although some of this waste is recovered for productive uses, most of it is disposed of in landfills, incinerators, and open dumps; is littered on city streets and country landscapes; or is carried out to sea and dumped. In addition, sewage sludge, demolition, waste, construction refuse, and recycled junked autos add to the municipal solid waste disposal burden. This does not even include runoff from mining and agricultural activities. Nor does it include waste from industrial processing activities.

Although consumers enjoy the benefits of industrial productivity, they also share the problems of disposal. Wastes that are deposited in open dumps breed rats and insects, and rains may wash chemicals from these dumps into streams. Wastes that are covered in a sanitary landfill may seep into a spring below and into a large river where they kill fish and wildlife. Those wastes that are burned cause air pollution.

The esthetic effects of open dump sites, uncollected trash, and littered streets are of general concern. Although these effects are not directly measurable in dollar terms, millions are spent annually for litter pickups. High rates of solid waste production also imply that we are digging deeply into our supply of natural resources such as fuels, minerals and forests. This digging is a most significant source of environmental damage. Many persons have come to regard our high-waste, low-recycle system as inherently wasteful of our endowment of natural resources.

Hazardous wastes are the particularly dangerous discards of our highly industrialized society. Although they should be disposed of with special care, sometimes they are not. They can poison, burn, maim, blind, and kill people and other living organisms. They may snuff out life immediately when inhaled, swallowed, or brought into contact with the skin. Some are nondegradable and persist in nature indefinitely. Some may accumulate in living things. Some may work their way into the food chain.

Hazardous wastes are with us as solids, liquids, gases, and sludges. They may catch fire or explode when exposed to normal temperatures and pressures or when exposed to air or water. Some may be set off by an electrostatic charge, others by being

Dropped or jarred. Some are highly sensitive to heat and friction.

When simply dumped on the land, hazardous wastes may percolate or leach into groundwater and thus contaminate or poison water supplies. They may be carried by rain runoff directly into streams, rivers, lakes and oceans. At some manufacturing plants, hazardous wastes are stored in open ponds or lagoons; these wastes can also create pollution problems. Hazardous wastes may pollute the air when incinerated; the residues from the incineration may themselves be hazardous and still require careful disposal.

Sanitary landfills, where wastes are covered with earth each day, are preferable to burning or open dumping. But unless specially designed, a sanitary landfill may still pollute water, and venting gas may pollute the air. Injecting hazardous wastes into deep wells can pollute groundwater.

Ocean dumping is a threat to marine life and the ecological balance of the seas, as well as to humans who come in contact with improperly sealed and weighted hazardous materials dropped into the oceans.

However -- and this is the key to effective regulation -- technology is available today to treat and safely dispose of most nonradioactive, hazardous wastes. What is needed is a general realization that business as usual in the disposal of hazardous wastes is just not good enough.

Although no absolute evidence exists that adverse health effects are caused by low levels of radiation, EPA assumes that even the smallest amounts of radiation are potential causes of cancers or other health damage. Besides being open to natural radiation from the sun, humans are exposed to radiation from x-ray equipment, color television sets, luminous dial watches, microwave ovens, fallout from past testing of nuclear weapons in the earth's atmosphere, and radiation from jet flights.

The most controversial sources, however, are nuclear plants that use uranium as fuel to generate electricity. A sufficient supply of clean energy is essential if we are to sustain healthy economic growth and improve the quality of our national life. Utilities are turning to nuclear power stations to fill expanding needs. Although they avoid many of the environmental problems of fossil-fueled plants, nuclear plants present their own potential hazards that must be controlled.

Safety problems in nuclear reactors will become more complicated as larger reactors are built. Moreover, the day-to-day operation of nuclear reactors results in radioactive waste. The serious problems of how the very hazardous, high-level wastes will be stored, reduced in volume, and finally disposed of has not been fully resolved.

Although most of the waste at present comes from the production of nuclear weapons and related research, the expanded construction of nuclear power reactors will further complicate the problem. High-level radioactive waste from expanding commercial nuclear power production is expected to about 60 million gallons by the year 2,000, compared to 600,000 gallons in 1973.

In recent years toxic substances have become a major concern. Residues from chemical manufacturing products are all around us -- in our air, our water, our food, and things we touch. Many of these chemicals have become essential to our lives. Synthetic fibers are used to replace human tissue and to create our easy-to-wear wardrobes. Plastics have been molded for use in almost every phase of our activities -- in transportation, in communication, and industrial and consumer goods industries. Our leisure time has been enhanced, for example, by durable, low-maintenance pleasure boats and other recreational equipment made from plastics.

The chemical industry makes a significant contribution to the national economy, with sales representing more than 6 percent of our gross national product. Millions of workers are employed by the chemical industry or the chemical-dependent industries.

While we have enjoyed the extensive economic and social benefits of chemicals, we have not always realized the risks that may be associated with them. In recent years, many chemicals commonly used and widely dispersed have been found to present significant health and environmental dangers. Vinyl chloride, which is commonly used in plastics, has caused the deaths of workers who were exposed to it. Asbestos, used in flame retardants and insulation, has been known to cause cancer when inhaled. Mercury, another substance in everyday products, has caused debilitating effects in Japan.

Perhaps the most vivid example of the danger of uncontrolled contaminants is the family of chemicals called polychlorinated biphenyls (PCB's), which are used in such products as housing insulation, plastic food containers, etc. It was not until after tens of millions of pounds of PCB's were produced and released into the environment that scientists realized how toxic and persistent they were. Despite limited restrictions imposed by the industry in the early 1970's to reduce the production of PCB's and to restrict use of PCB's to electrical equipment where escape to the environment would be minimal, high levels of PCB's continue to persist in the great lakes and other major waters across the nation. Over the past few years, we have found PCB's in our bodies and in the milk of nursing mothers.



Recently some close relatives of PCB's, polybrominated biphenyls, or PBB's, have posed a similarly grave threat to human health and the environment. PBB's are used, for instance, as flame retardants in textiles and are used in making plastics. Accidental use of PBB's in animal feed led to the contamination of thousands of Michigan cattle, which had to be slaughtered. The health effects of PBB's on the Michigan farming families who were exposed to PBB's and consumed PBB-contaminated products are still uncertain.

By the late 1960's, lakes and waterways of our country had become choked with sewage, waste, and other forms of pollution. The air in urban centers was continually fouled with suspended dirt and poisons. The rate of lung ailments was increasing noticeably. Quantities of the residue of DDT and other pesticides were being discovered in tissue samples from wild life and even human beings. Empty cans, the carcasses of automobiles, and other forms of trash littered the landscape. Concern was being expressed about potential problems associated with the use of radioactive materials. Levels of noise from highways and airports were deafening.

The first steps toward achieving a cleaner environment and protecting human health have been fruitful. Americans are learning how to use modern technology for the service of civilization. A deeper respect is being developed for the nature of the biosphere. The belief that industry cannot endure the restrictions of environmental controls is being replaced by an awareness of industry's role in taking care of the environment.

Between 1970 and 1975, EPA took well over 6,000 enforcement actions against the violators of air, water, and pesticide laws. As a result of rigorous enforcement of the clean air act Amendments, current standards for auto-produced pollutants require reductions of automobile emissions. Regulatory actions leading to the diminished use of persistent pesticides, such as DDT, have reduced the detection of these pesticides in human tissues.

Federal standards are being established to protect citizens from unnecessary exposure to radiation. EPA has set noise standards for new heavy duty trucks and for portable air compressors. The agency is also developing regulations for new buses, loaders, motorcycles, garbage compactors and truck refrigeration units.

Through the municipal construction grant program for wastewater treatment, the water discharge permit program, and the industrial water pollution control program, many of our rivers and lakes, such as lake Erie, one of the most threatened waterways, are becoming cleaner.

The growing problems of ocean spills and ocean dumping have become matters of special concern. The marine protection, research and sanctuaries act authorized EPA to regulate ocean waste disposal, and accordingly the agency has carried out a permit program to limit the kinds and amounts of waste that can be dumped. The need for improved international cooperation to protect the oceans from oil and other pollution hazards is recognized, as demonstrated by the ocean dumping convention adopted at London in 1972 and by the 1973 London convention for the prevention of pollution from ships.

Certainly EPA could not have begun the job on its own. The agency has always emphasized that positive environmental action demands public participation. State and local governments, citizen organizations, and countless private individuals, many of whom have been working on pollution control for years, are working with the agency.

The realization that the U.S. is part of an ecosystem that must not be destroyed has forced Americans to ask some fundamental questions: where and how do we want economic and urban growth? How can we best use and re-use our natural resources? How can we adjust our priorities to ensure that we fulfill our energy, transportation, housing, recreation, and personal consumer needs without intensifying environmental problems? It is up to Americans to develop a new

pattern of environmental management. It is up to all of us to become the first generation to work with nature instead of against her.

### **Tab H.3 -- IP Event Information Sheet**

#### **Agriculture**

As the leader of the world's industrialized nations, the U.S. capitalistic system of free enterprise has brought the U.S. to the forefront. It has only been in the last ten years that other industrial nations have challenged the U.S. for supremacy in selected areas. As in culture and diversity, the enterprise of the U.S. is very diverse. It ranges from the "mom and pop" store to the large discount corporations. Yet, there is still the opportunity for the individual, for instance, in agriculture.

Many of the factors which contributed to our general economic growth also shaped our agriculture: an energetic and highly motivated population, the absence of feudal and ecclesiastical constraints, and a rich base of natural resources. These factors, and others, can be more sharply defined and grouped as they apply to agriculture. An important point to stress at the outset is the great variety in the types of farming, in climatic and soil conditions, and in regional specialization in agriculture. These differences are on a bigger scale than most foreigners realize.

The distinctive features that make most of our farms different from those in the less developed nations are the wide diffusion of land ownership in comparatively large units, the high ratio of capital (plant and machines) to land and labor, and the extensive and long term commitment to agricultural research and education.

Despite the growth of corporation farming and the persistence of some forms of tenancy, the great bulk of American farms are family-owned and operated. This is worth stressing because in many parts of the world, the typical form of agricultural organization is a countryside dominated by large landlords and worked by a peasant/tenant class. Most of our commercial farms are at least 100 acres in size, and usually far larger, compared to the tiny plots of a few acres found in less developed areas. It was the high proportion of land-to-people with which we began our history that led us to stress labor-saving machinery in farming as well as in industry.

The large size of farm units not only encouraged the search to save labor costs, but made possible the use of machines on an economic basis. Tractors, balers, silos, and other forms of plant and equipment would not pay for themselves if they were used on very small farms. Equally important for the widespread adaptation of machinery is the relatively easy access to cheap credit provided by a variety of private and public institutions. This is another sharp contrast to much of the farming overseas, where onerous taxes and rents limit the chances of capital accumulation among even the thriftiest farmers, who are without adequate credit facilities to see them through hard times or to help finance improvements.

An outstanding feature of the history of American agriculture has been the deep, long term commitment to research and education. The land grant college system, supported in part by the federal government and partly by the states, is an important example of this commitment. Our long support of public education has helped to produce a highly literate agricultural population receptive to new ideas. At the same time, publicly and privately sponsored research in agricultural science and technology has created a momentum which has led to improved productivity. Some experts, in fact, think that productivity in agriculture has increased far more rapidly than in industry over the last 35 years, due to the contributions of chemistry, biology, and technology.

This points to a single theme which you must keep in mind. Farming in America is a highly commercialized and industrialized occupation. Things which farmers used to do or make for

themselves are now provided by nonfarm business. For instance, agricultural families not only buy their seed, fertilizer, and equipment, but their food, clothing, shelter, comforts, and sometimes even luxuries, in town. Most of them do not live very different lives from nonfarmers. We take all this for granted, and it may seem trite; but for some foreigners, coming from areas where a deep social chasm exists between townspeople and those who work in the countryside, it is fundamental to understanding the political, social, and economic roles of American farmers.

On the other hand, there is a dark underside to the generally successful performance of those who work the land, and it cannot be overlooked. Specialized agricultural production has benefitted consumers far more than most farmers. Most agriculturists have become extremely vulnerable in the market economy, but are less than the managers of other enterprises to adjust to that market. As a result, many people are leaving their farms because they can no longer make a living on them, and many of those who remain do so in the face of relatively meager returns. Even the plight of such owners of family farms is not as grievous as that of the migratory workers who occupy the bottom rung of the agricultural ladder.

There are two separate, if closely related, "farm problems". One is the economic dilemma facing the efficient producer of items for which there is insufficient demand. For years, he and the government have been wrestling with the problem of surpluses. Then there is the social dilemma of farmers and farm workers who contribute little or nothing to the surpluses, but who receive such low incomes that they can best be described as inhabitants of rural slums. Such people account for roughly one third of our farm population.

No matter how much we are concerned with such problems (and they have both received much attention), we must remember that on the whole the record of our farms is an outstanding one. Agriculture has been and remains a vital part of our economy. The values and ideals of an agricultural society have shaped the American character and left their mark on it. They have had a powerful influence on many of the political institutions. Today's farmers, as producers and consumers, are still extremely important contributors to our standard of living. Agricultural policy-making provides one of the best illustrations of the way our society handles difficult problems, weighing the pressures of different groups and interests and establishing the areas of conflict and of cooperation among such groups and with government on its various levels.

Many things about American agriculture today can be understood only by reference to the kind of men and women who settled our farms, the ways in which they did it, and the adjustments that they made to changing conditions.

The westward movement of the American people was largely agricultural; after about 1815 the settlement of rich, relatively empty regions was particularly rapid. Much of it arose from the desire of men in the old colonies to carve out their own freeholds in new, promising country. As a result, the basic feature of our agriculture until the 1930's was the growth in the number of farms and the amount of land under cultivation.

Federal land laws made settlement easy, and the new territories and states granted legal and political concessions to migrants, to attract population. From the earliest time migration was attributable to government action as well as individual enterprise.

From the outset American farmers were commercially oriented. Self-sufficiency, after all, is just another term for poverty; most settlers sought to build successful and profitable farms.

Our agriculture was also shaped by shortage of labor. This is reflected in the early introduction of slavery. Most of the improvements in agricultural implements and machines were designed to save labor. This is a lasting theme in our agricultural story.

Farms in this country, unlike those in most parts of the world, were isolated from village life, and families were frequently lonely. Since they were so far from neighbors and the community, farmers had to rely on their own efforts for many things, whether they acted individually or collectively. During the last half century many developments have broken down the distances between the countryside and the town and have closed the cultural and social gaps between them. The spread of the automobile, electricity (and with it, radio and television), and mass journalism are some of the factors in this change. But many farmers today treasure an independent spirit that owes much to the older tradition.

Toward the end of the 19th century the development of transportation and communication tended to draw American farmers into a tight competitive situation. Business and labor could react to such pressures by organizing corporations and unions, but the farmer's response was mainly to try producing more so he could maintain his income in the face of falling prices. That often made things worse since it drove prices down further.

Efforts to increase productivity and efficiency began to pay off in a big way in the 1920's, at the time when our important foreign markets were shrinking. The result was a period of hard times for many farmers, even though the rest of the economy was doing fairly well. This bad situation for agriculture was made desperately worse by the great depression that set in after 1929. Since then the federal government has taken a more direct role in meeting the fundamental economic problem of commercial farmers, the overproduction of certain commodities. It should be stressed

That although this problem and many others connected with farming arise out of the operation of a relatively free market and an emphasis on price relationships, these characteristics also bring many benefits and have helped to foster the outstanding productivity of our farms. Finally, it should be understood that farmers had a large voice in deciding what controls to accept.

Since the second world war there has been a great increase in the size of the investment needed for successful farming. At the same time there has been an increase in the minimum amount of land needed for profitable and efficient use of the new, expanding technology. As a result of these pressures many farmers have left the land and their holdings have been purchased by those who remain. The consolidation of farms in this way, and the higher capitalization that goes with it, greatly increases the productivity of each worker on the land. At the same time it adds to the already high risks of farmers and makes them more vulnerable than ever to price declines.

Today, about 80 percent of American farms are family-owned and have been for generations. However, there has also been a significant amount of tenancy. This was particularly true in the south where "sharecrop" tenancies arose after the civil war because of the financial stringencies of both the former slaveholders and the newly freed slaves. Many other groups gradually fell into this category as well. By the 1930's about 40 percent of our farmers were tenants of some kind. Since then, government programs to assist farm purchase and the movement of tenants into other occupations have sharply reduced the total.

Today about 20 percent of our farmers are leasehold tenants. Many of them are skilled operators who prefer to rent land to free their own capital for machinery and operating expenses. As the requirements for agricultural capital continue to grow, this kind of tenancy seems likely to increase.

A sound agriculture depends heavily on credit. Farmers must borrow to buy land, to improve it by such things as drainage or irrigation, to put up buildings, to buy machines, and to meet operation expenses. Most producers in other fields receive a fairly steady income throughout the year, but farm income tends to be concentrated at harvest seasons when crops are marketed. During the rest of the year, the farmer is vitally dependent on savings or credit.

As the need for capital in farming grew, so did the demand for more credit facilities of all kinds. Local storekeepers, banks, mortgage companies, and implement dealers were some of the private agencies which always provided a sizable proportion of the needed capital. Until the 1920's, much of it was provided by the farmers themselves out of savings. Since the turn of the century, these have not been enough to meet the growing requirements of capital intensive agriculture.

To deal with these problems government increasingly has intervened to direct and support agricultural credit facilities. The principle adopted has been to isolate the interest rates available to farmers from the general interest rate.

Nowadays credit is available to farmers from three major sources:

- (a) private institutions, like banks and insurance companies,
- (b) farm cooperatives and credit unions, and
- (c) federal agencies.

Each of these makes loans for working capital, for long term credit, and for intermediate credit. The last of these, particularly in the form of five year loans, has become increasingly important in the past few years.

Since about 1850 continuous effort has been made to apply science to farming. This was an outgrowth of a continuing faith in the value of education for farmers. The land grant colleges and universities have aimed at producing scientific farmers; many of our agriculturists have had some college training, and most of them have had some special courses of instruction. Federal and state governments have supported experiment stations throughout the country which work to improve agricultural methods. A county agent, supported partly by joint federal and state funds and partly by local private groups, serves to bring farmers the newest ideas and techniques from the laboratories.

These investments did not pay off quickly; until the beginning of this century there were few tangible results. Since then agronomic "breakthroughs" have come thick and fast. The introduction of hybrid corn in the 1920's was one of many innovations which have vastly increased crop production. The average yield of corn per acre has more than tripled since the 1930's.

In most of the world the farmer has been a traditionalist. He has worked the soil according to ancient custom, adverse to change. In the United States farmers have been as progressive and enterprising as any part of our population. Sometimes the experiment stations are hard put to keep the more advanced farmers from using new notions before they are thoroughly tested. The successful American farmer, therefore, is today a highly skilled manager and technician who works with his brains far more than his muscles. Government, the farm organizations, and the industries serving farmers will keep the pipelines of knowledge open and enable our farmers to quickly apply this knowledge to everyday farm operations.

Although technological advances have tended to concentrate farm land into larger holdings, they have also helped to disperse farm markets. The older commodity collecting centers, Kansas city for beef cattle, Chicago for grain and pork, are giving way to a decentralized marketing system. The previous functions of brokers, wholesalers, and other middlemen are increasingly being

Limited or eliminated; processors and supermarket chains now deal directly with the farmers. In the riskier kinds of production, like the poultry industry, contract farming has been initiated.

For the processor, contract farming assures a stable supply in a highly competitive situation; the motives are similar to those which impelled industry to reduce risks by "vertical" organization of production. For the farmer, contracting his crop means greater security but loss of independence. Increasingly, farming is not merely a way of life; it is becoming "agribusiness." The function of the farmer is to apply a "packaged technology" to an outdoor biological "factory," with many of the old functions, seed production and selection, for instance, performed outside the farm. The man who succeeds is the one with sufficient capital and good credit, managerial and engineering skills, a little luck, and, perhaps, political influence. He need never get his hands dirty.

The dynamic changes of the last three decades have left many American farms in trouble. The capital requirements of modern agriculture have outstripped the resources of many farm families. Many hold on to their land, but are marginal and relatively unproductive. Others have left farming, about one third of those in agriculture in 1945 were gone by 1960.

Mechanization of farming and a much wider use of chemicals has brought a dazzling increase in productivity, about twice the rate of growth as in industry during the last four decades. It has also brought serious social problems. Surplus farm labor and farm owners have been forced off the land. Only about 8 percent of the American population lives and works steadily on the land, as contrasted with an estimated 50 percent of the Russian population. Migratory laborers fill the gaps during the harvest season. It is difficult to set and enforce minimum working and living conditions for these itinerant workers, and their way of life presents a real social and ethical problem, not to mention the politically sensitive status of illegal aliens.

These difficulties worry Americans, and rightly so, for they conflict with some of our most cherished beliefs. It should be emphasized that they are difficulties that arise from success, from the operation of the most efficient and most productive farming system the world has ever seen.

Government action on behalf of our farmers is a very old story. From the beginning of the republic it made land cheap and easily available to settlers, helped finance internal improvements (roads, canals, railroads, etc.) Aimed at benefitting the farmer, and sought to aid him in many other ways. The principle has always been there; if some of the policies adopted in recent times are new, so are the problems with which they deal.

Since the 1920's, agricultural policies have had a twofold purpose: (a) to continue and expand efforts to increase productivity and to improve the quality of farm life. These aims have been pursued through the research agencies of the department of agriculture, the rural electrification administration, the federal crop insurance administration, the soil conservation service, and many other agencies. Their efforts have been remarkably successful and relatively uncontroversial. (b) to handle the basic economic problems of agriculture overproduction and low returns through crop subsidy payments, arrange allotments, storage, and marketing arrangements through the commodity credit corporation and other devices. These efforts began with the agricultural adjustment act of 1933, at a time when most of our farmers were faced with disaster. Except for a period of wartime high demand from 1941 to 1947, they have continued in some form or another until today. Their objective is to maintain the prices of certain commodities at a level which will assure something approaching parity (the purchasing power of farmers relative to other groups during favorable years) and to hold down production by reducing the acreage devoted to selected crops.

Recent controversies have centered around the level of price supports and the strictness of acreage controls. The difficulty, of course, is that the new, explosive productivity has enabled good farmers to produce far more on fewer acres and still reap the benefits of price supports. Hence these efforts are criticized because they help those who need it least. The costs of these programs assumed large dimensions only in the last 30 years; it may be possible sooner or later to bring them under tighter control. Most important, they have been designed, whatever their imperfections, to deal with a deep, serious problem.

There are many paradoxes in our current farm situation. We led the world in the development of agricultural machinery because we were short of labor, and now much of the labor on farms is being displaced by machines and has nowhere to go. We have created a "crazyquilt" pattern of subsidies in the name of preserving the family farm, yet that institution is shrinking, and many of those which are left are in serious trouble. We have paid the same price for progress in agriculture that we have for industrialization and urbanization in general -- the loss of some individual independence, the breakdown of old family and community patterns, and the abandonment of many traditions. Once again it is important to remind yourself that we have solved the oldest problem of mankind providing an abundant, cheap diet, with a minimum of effort for society as whole. Equally important, this has been achieved with a minimum of restrictions on the freedoms, economic or political, of that society.